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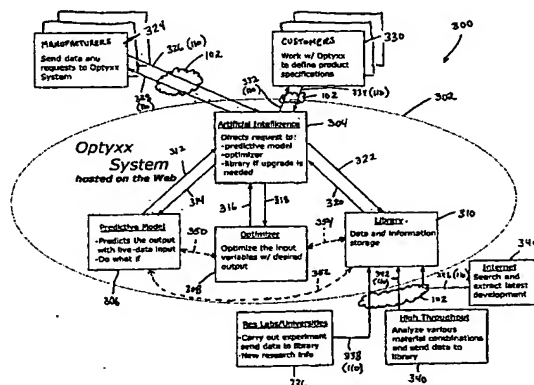
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(54) Title: COMPUTER-IMPLEMENTED SYSTEM AND METHOD FOR MEASURING AND IMPROVING MANUFACTURING PROCESSES AND MAXIMIZING PRODUCT RESEARCH AND DEVELOPMENT SPEED AND EFFICIENCY



(57) Abstract: An integrated multi-step computer-implemented system and method for measuring and improving manufacturing processes and maximizing product research and development speed and efficiency is disclosed. The system includes a predictive model (306) that predicts output from data input, an optimizer (308) that optimizes input variables based upon desired output variables, and a library (310) that stores data and information. The system further includes an artificial intelligence (304) that receives requests and information from manufacturers (324) and customers (330), and directs the requests and information to the predictive model (306) if an output prediction is requested, to the optimizer (308) if an optimized input is requested, or to the library (310) if the requests cannot be answered by the predictive model (306) or optimizer (308). The predictive model (306), the optimizer (308), and the library (310) all interconnect with the artificial intelligence (324). The system further includes a high-throughput screening system (340) that analyzes various material combinations and sends data to the library (310).

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# INTERNATIONAL SEARCH REPORT

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PCT/US03/01272

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 19/00; G05B 13/02

US CL : 700/28-32, 47-50, 95, 96, 108, 109, 173, 174, 182; 703/2

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 700/28-32, 47-50, 95, 96, 108, 109, 173, 174, 182; 703/2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
World Wide Web (Internet), ACM, IEEE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Google, Digital Library

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2001/0049595 A1 (PLUMER et al.) 06 December 2001 (06.12.2001), see entire document	1-56
A,P	US 2002/0065572 A1 (INA et al.) 30 May 2002 (30.05.2002), see entire document	1-56
A,P	US 2002/0072828 A1 (TURNER et al.) 13 June 2002 (13.06.2002), see entire document	1-56
A	US 5,877,954 A (KLIMASAUSKAS et al.) 02 March 1999 (02.03.1999), see entire document	1-56
A	US 6,110,214 A (KLIMASAUSKAS et al.) 29 August 2000 (29.08.2000), see entire document	1-56
A	US 6,112,126 A (HALES et al.) 29 August 2000 (29.08.2000), see entire document	1-56
A	US 6,246,972 B1 (KLIMASAUSKAS) 12 June 2001 (12.06.2001), see entire document	1-56
A,P	US 6,434,435 B1 (TUBEL et al.) 13 August 2002 (13.08.2002), see entire document	1-56
A,E	US 6,535,795 B1 (SCHROEDER et al.) 18 March 2003 (18.03.2003), see entire document	1-56



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## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ✓	C.W. HART, On-Line First Principle Models-State Estimation, The Fifth Conference on Advances in Process Control, September 2-3, 1998	1-56
A	Controlling Manufacturing Via the Internet, Peter Gwynne, Number 202, October 2000, <a href="http://www.spie.org/web/oer/october/oct00/cover1.html">http://www.spie.org/web/oer/october/oct00/cover1.html</a> , pg. 1-3, printed on June 23, 2003.	1-56
A ..	Press Release-Abnormal Situation Management, Control Arts Inc., <a href="http://www.controlartsinc.com/press_ind.htm">http://www.controlartsinc.com/press_ind.htm</a> , October 16, 2000, pg. 1-2, printed on June 23, 2003	1-56
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